

CLAIMS

1.-12. (Canceled)

13. (Currently Amended) A method comprising:

generating, using a plurality of encoders, a plurality of separately transrated output bitstreams from a compressed input bitstream including at least one input video segment running at a variable rate including at least one video frame from a packet payload of the compressed input bitstream; and

incorporating the plurality of output bitstreams into a video block for the compressed input bitstream comprising a header, an input video segment, a plurality of output video segments corresponding to the plurality of output bitstreams, and offset information for each ones of the plurality of output video segments, the offset information configured to indicate a start of a corresponding output video segment when each responsive to ones of the plurality of output video segments are packaged end-to-end within the video block, and separately encoding individual ones of the output video segments at a different bit rate while including a same portion of programming content from the compressed input bitstream;

wherein the offset information allows for selection of at least one output video segment from the plurality of output video segments responsive to bitrate demands of other concurrent output streams from at least one other compressed input bitstream without real-time transrating of any of the plurality of the output bitstreams.

14. (Original) The method of claim 13 wherein the at least one video frame includes a DCT coefficient associated with a partial decode of the packet payload.

15. (Previously Presented) The method of claim 13 further comprising segmenting the compressed input bitstream into successive input video segments each comprising a different content portion of an elementary stream of the compressed input bitstream.

16. (Canceled)

17. (Previously Presented) The method of claim 15 wherein the at least one output video segment includes one of a group of coded pictures, a coded frame, and a video slice.

18. (Previously Presented) The method of claim 13 further comprising interleaving transport packets of the selected at least one output video segment from the video block for the compressed input bitstream with transport packets of the other concurrent output streams from the at least one other compressed input bitstream.

19. (Canceled)

20. (Previously Presented) The method of claim 13 wherein the video block header comprises at least one of packet schedule information, or compression statistics.

21. (Previously Presented) The method of claim 13, wherein each of the plurality of encoders includes a corresponding quantization scale factor and further comprising adjusting the quantization scale factor to change from encoder to encoder the bit rate by at least one of a fixed percentage or a fixed amount.

22.-37. (Canceled)

38. (Currently Amended) A system comprising:

a plurality of encoders configured to generate a plurality of separately transrated output bitstreams from a compressed input bitstream including an input video segment; and

a formatter module configured to incorporate the plurality of output bitstreams into a video block for the compressed input bitstream comprising a header, the input video segment, and a plurality of video segments corresponding to the plurality of output bitstreams, ~~each the formatter module configured to separately encode individual ones of the video segments being separately encoded~~ at a different bit rate while including a same portion of programming content from the compressed input bitstream;

wherein the header is configured to identify an offset for ~~each~~ ones of the video segments indicating a start of ~~a~~ each ones of the video segments ~~when responsive to~~ to the video segments are arranged end to end in the video block;

wherein the switch is configured to seek the start of the selected one of the video segments responsive to extracting the offset associated with the selected one of the video segments from the header; and

wherein the video block is configured to allow a switch module to select from the video block for the compressed input bitstream one of the video segments for output responsive to bit rate demands of other concurrent output streams from at least one other compressed input bitstream without decoding of any of the plurality of the output bitstreams.

39. (Previously Presented) The system of claim 38 further comprising an extractor module configured to extract a packet payload from the compressed input bitstream and to segment the compressed input bitstream into a plurality of successive input video segments each comprising a different portion of an elementary stream of the compressed input bitstream.

40. (Previously Presented) The system of claim 39 wherein each video segment includes one of a group of coded pictures, a coded frame, or a video slice.

41. (Canceled)

42. (Previously Presented) The system of claim 38 wherein the video block is configured to allow the switch module to interleave transport packets of a selected one of the plurality of video segments from the video block for the compressed input bitstream with transport packets of the other concurrent output streams from the at least one other compressed input bitstream.

43. (Previously Presented) The system of claim 42 wherein the video block header comprises at least one of packet schedule information or compression statistics.

44. (Previously Presented) The system of claim 38 wherein each of the plurality of encoders is configured to adjust a quantization scale factor for each of the plurality of encoders to reduce bit rate from encoder to encoder by at least one of a fixed percentage or a fixed amount.

45.-49. (Canceled)

50. (Previously Presented) The method of claim 18 further comprising storing the at least one video frame in at least one frame buffer.

51. (Previously Presented) The method of claim 18 further comprising transmitting at a substantially constant bit rate over a given period the interleaved transport packets from the respective compressed input bit streams, each running at a variable bit rate, to a buffer for outputting to a channel of an available channel capacity.

52. (Canceled)

53. (Previously Presented) The method of claim 51 further comprising:
including compression statistics into the header; and
normalizing a video quality of the output stream responsive to the statistics.

54. (Previously Presented) The system of claim 38 further comprising at least one frame buffer to store at least one video frame of the compressed bitstream.

55. (Previously Presented) The system of claim 38 wherein the video block is configured to allow the switch module to transmit at a substantially constant bit rate over a given period the interleaved transport packets from the respective compressed input bit streams, each running at a variable bit rate, to a buffer for outputting to a channel of an available channel capacity.

56. (Canceled)

57. (Previously Presented) The system of claim 55 wherein the video block is configured to allow the switch module to:

include at least one compression statistic into the header; and
normalize a quality of the output stream responsive to the statistics.

58. (Previously Presented) The method of claim 13 wherein the video block allows for selection of only one of the video segments for each video block for each compressed input bitstream with a control signal provided independently of further stream processing subsequent to the outputting.

59. (Previously Presented) The method of claim 13 wherein the video block allows for selection of only one of the video segments using information from the header of the video block.

60. (Previously Presented) The method of claim 59 wherein the information from the header includes bit rate information.

61. (Previously Presented) The method of claim 59 wherein the information from the header includes look ahead information relating to video blocks yet to be provided.

62. (Previously Presented) The method of claim 59 wherein the information from the header includes time alignment information to compensate for differences in the size of successively selected segments.

63. (Previously Presented) The method of claim 13 further comprising outputting to a buffer and modeling the current state of the buffer for underflow and overflow.

64. (Previously Presented) The method of claim 13 further comprising selecting segments from successive video blocks to substantially use fully a bit budget for a given period correlating to an available channel capacity.

65. (Previously Presented) The method of claim 13 further comprising outputting compatibly with a constant bit rate (CBR) channel located downstream.

66. (Canceled)

67. (Previously Presented) The system of claim 38 further comprising a scheduling module to provide a control to the switch module to determine which video segments to select free of any signal feedback only available following the output.

68. (Previously Presented) The system of claim 67 wherein the scheduling module is configured to analyze information from the header of the video block.

69. (Previously Presented) The system of claim 68 wherein the information from the header includes bit rate information.

70. (Previously Presented) The system of claim 68 wherein the information from the header includes look ahead information arriving before a later video block described by the look ahead information.

71. (Previously Presented) The system of claim 68 wherein the information from the header includes time alignment information used to compensate for differences in the size of successively selected segments.

72. (Previously Presented) The system of claim 38 further comprising a buffer fed by the output and a modeling module to model the current state of the buffer for underflow and overflow.